Liz Sexton-Kennedy

CDF Computing

Toronto

INFN Bologna

Glasgow

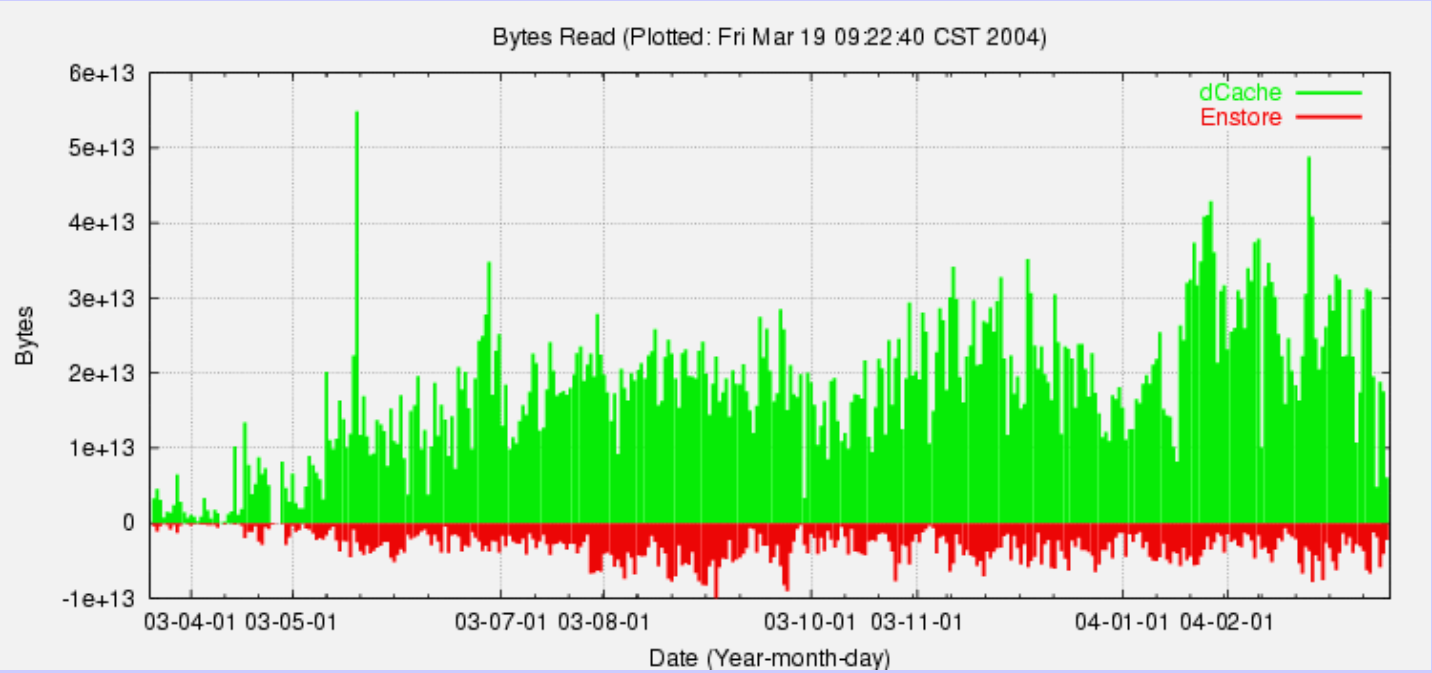
UC San Diego

- Current Scale
- Plans for future
- What we've done
- What we want to do

All MC done at remote sites, and 2 remote CAFs

CDF's Current Offline Scale

- 685M unique events have been processed
- 747 TB on tape, 4 copies x 250kB/event + MC
- 48TB/day moved, at 900MB/sec sustained
- CDF has pioneered commodity file servers
- We have deployed 1382 CPUs and 318 TB of disk in our PC farms,CDF CAF is a big success!



Plans for the Future

- Strong support from IFC & Bird reviews
- PAC agrees that plans for expanded DAQ bandwidth is well motivated by the physics
- Held a global computing workshop in Florida. A big success! 2nd round of CAF's by May 1st
- We are aiming for ~7 sites with ~200CPUs each ~1400 CPUs at FNAL for users plus ~500 CPUs for reconstruction

SAM is the enabling technology

http://cdfkits.fnal.gov/DIST/doc/DCAF/web/Florida_workshop.html

Karlsruhe

Barcelona

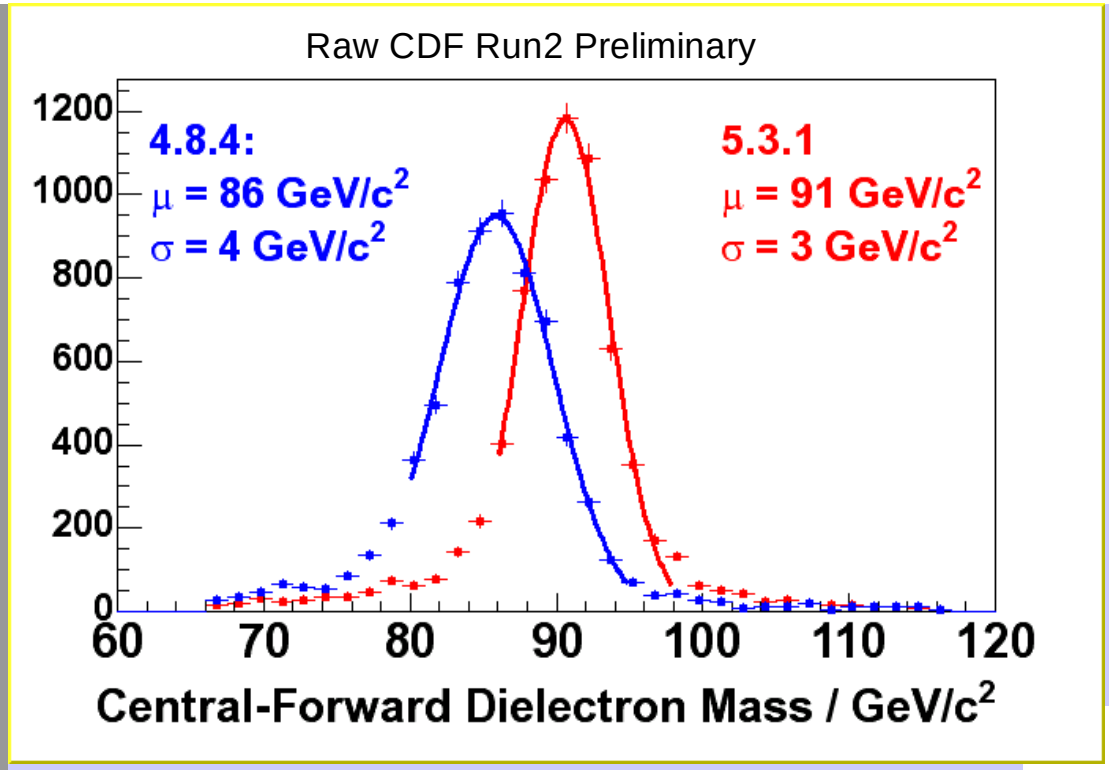
Japan

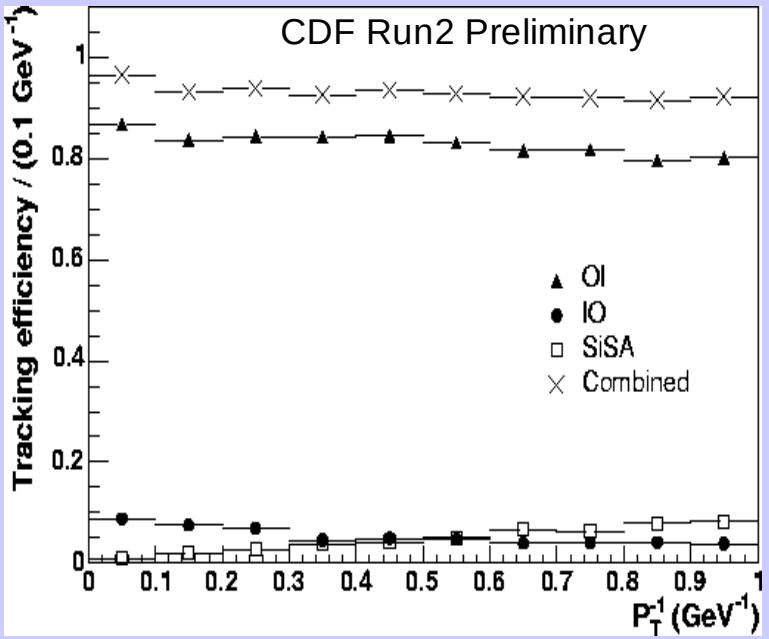
Taiwan

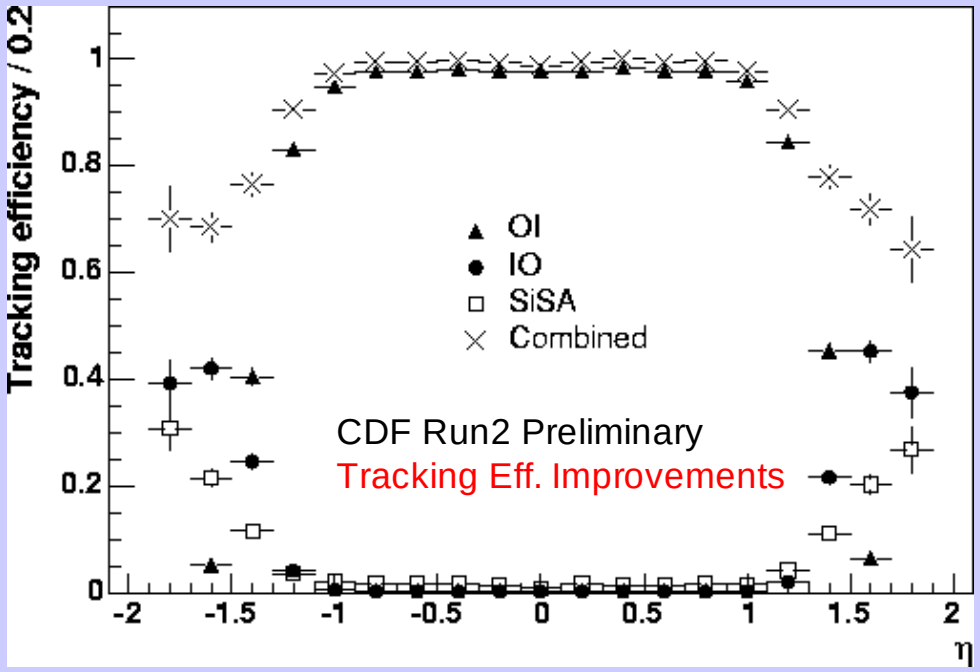
Korea

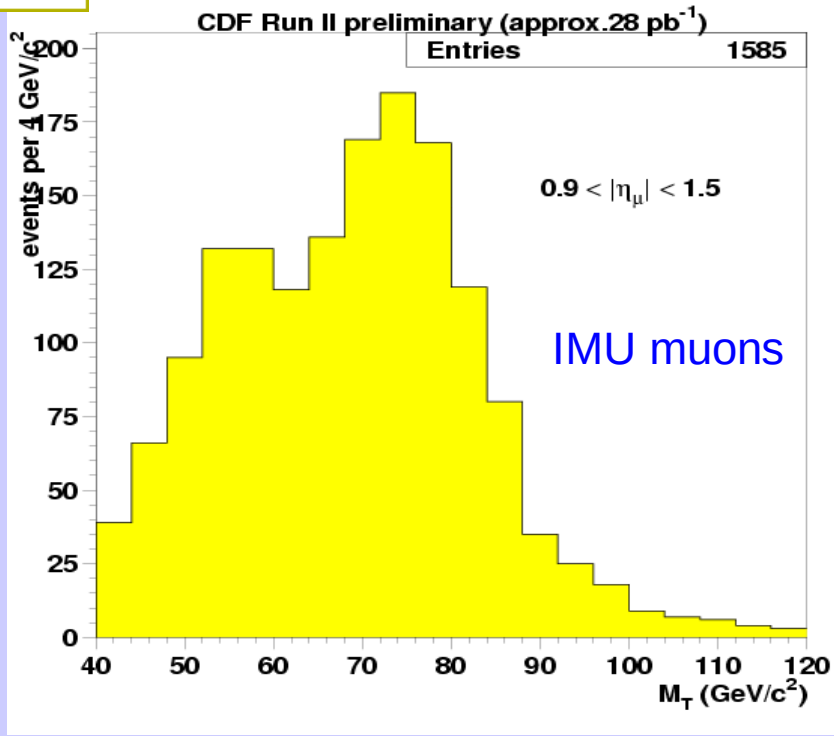
What We've Done

- Reconstruction passes(all data, 3 times):
  - 4.8.4 ran non-optimized, no forward tracking or IMU
  - 5.1.0 optimized, alignment improved, beamline used
  - 5.3.0 uses final CAL calib., high forward tracking eff.
  - Output of production is immediately useful
- Major upgrade of Simulation
  - Detector geometry description, drift models, parameterized charge deposition models
  - Much wider use of “realistic” simulation
- Split and conquer
  - Run 2 datasets are split into 42 different physics streams (for example hight pt muons = 3M events).
  - This is costly in farms operations but then reprocessing and physics analysis is much more efficient


Raw CDF Run2 Preliminary
4.8.4:
μ = 86 GeV/c²
σ = 4 GeV/c²
5.3.1
μ = 91 GeV/c²
σ = 3 GeV/c²
Central-Forward Dielectron Mass / GeV/c²


CDF Run2 Preliminary
Tracking efficiency / (0.1 GeV⁻¹)
OI
IO
SiSA
Combined
P_T^-1 (GeV^-1)

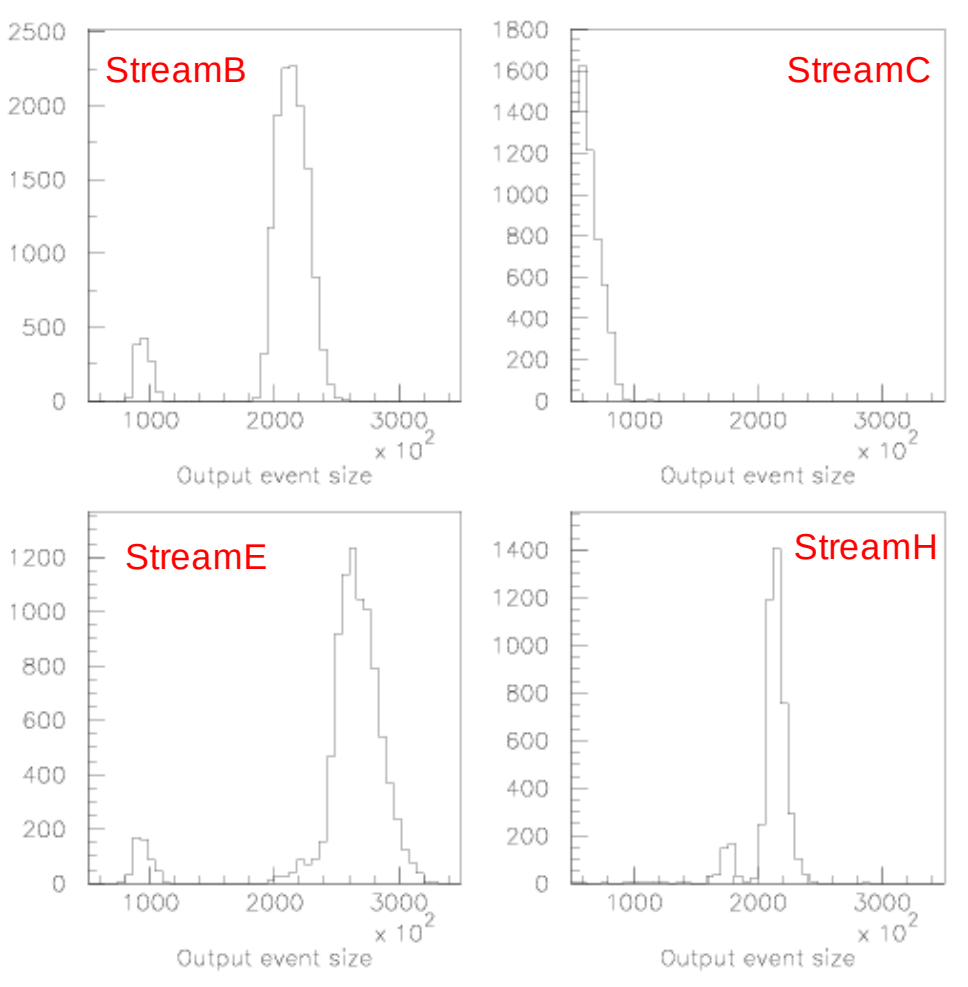

Tracking efficiency / 0.2
OI
IO
SiSA
Combined
CDF Run2 Preliminary
Tracking Eff. Improvements
η


CDF Run II preliminary (approx.28 pb⁻¹)
Entries 1585
events per 1 GeV/c²
0.9 < |η_μ| < 1.5
IMU muons
M_T (GeV/c²)

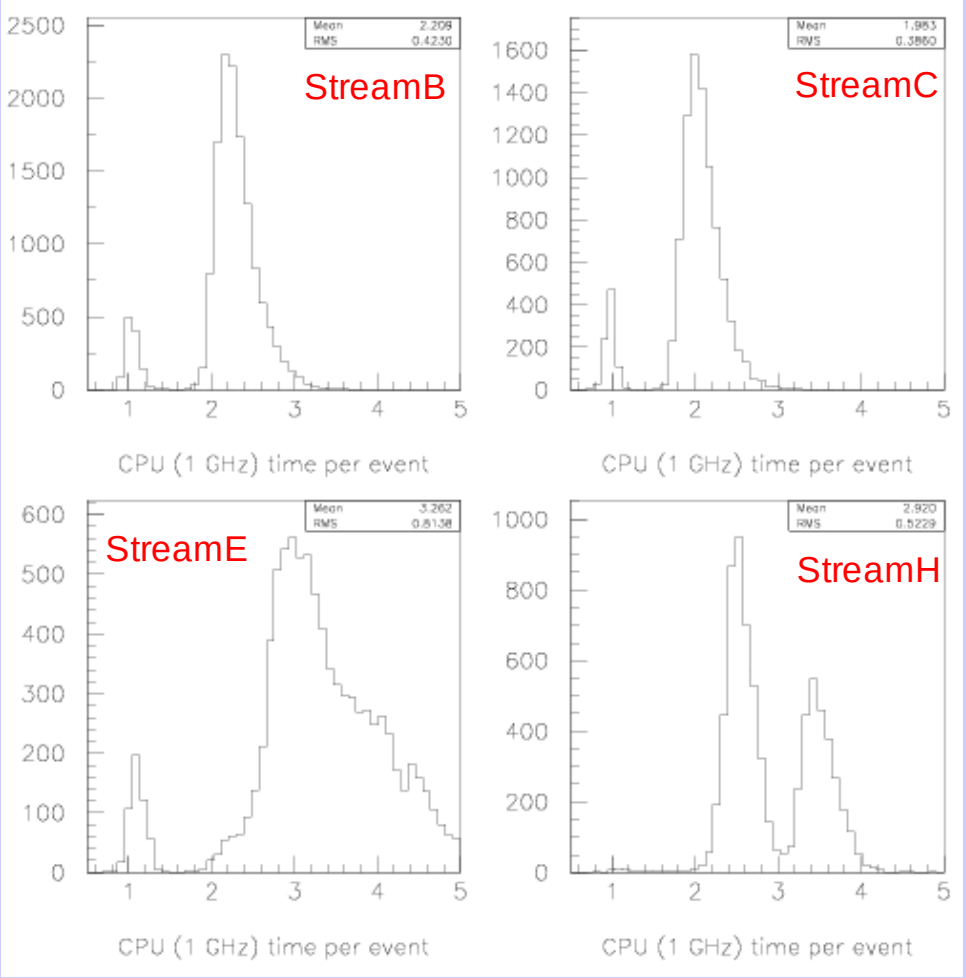
What we plan to do

- Improve data format further
- Reduce the number of copies of data
- Continue to improve tracking
- Complete migration away from KAI compiler
- Prepare code base for required GRID infrastructure without disrupting physics
- Continue to support core software packages
- Improve support for analysis packages eg. Stntuple, Btag*. They should be validated for frozen releases as they mature.

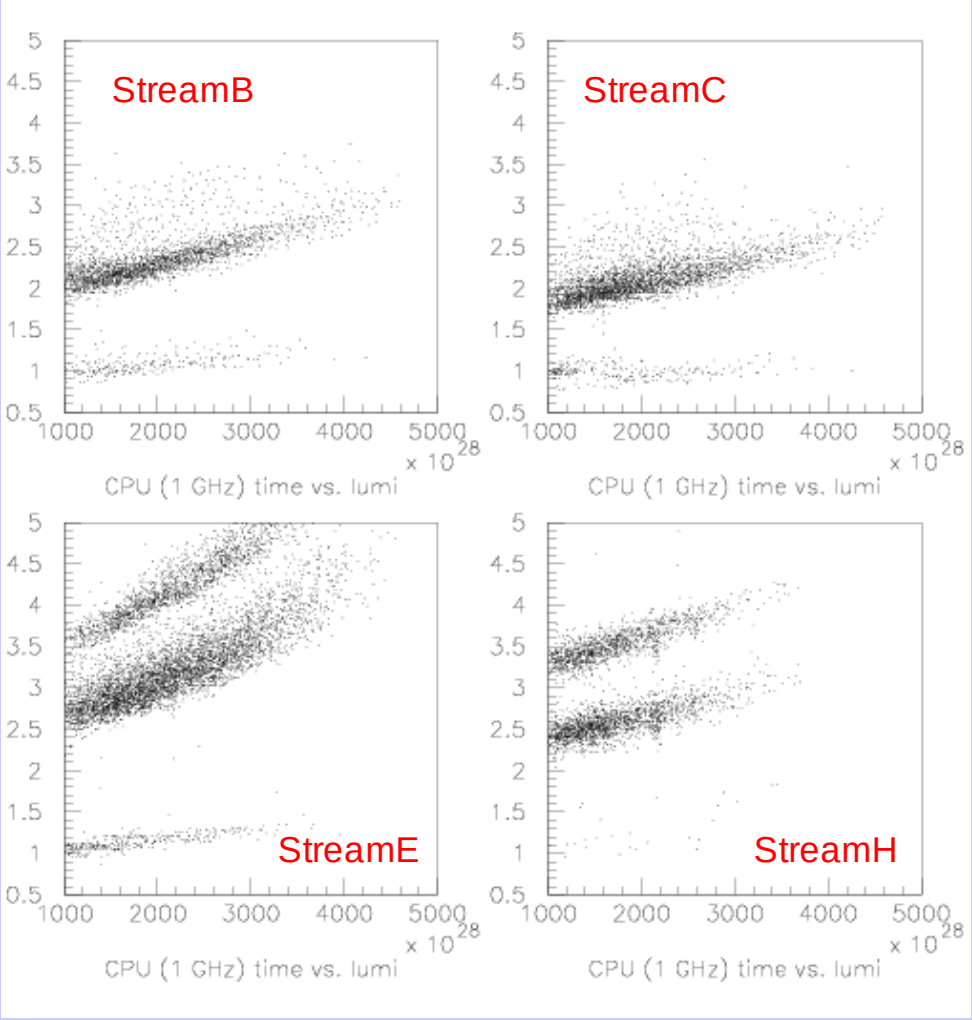
Backup Slides
Output Event Size



CPU time/event



CPU vs. Luminosity



CDF Detector